Aggregation of floating microplastics in coral-dominated eco-systems in Sri Lanka

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This study assessed microplastics (in the range: 0.3 – 5.0 mm) in surface waters around two major coral-dominated ecosystems in Sri Lanka; The Bar-Reef marine sanctuary (Northwestern Coast), and the Pigeon Island National Park (Eastern Coast) during 2018 and 2019. Plastic-based marine pollution, in particular, microplastic pollution is an emerging threat in Sri Lanka, due to the assumed impacts which those litter could impose on the natural environment. Theoretically, microplastics could carry toxic chemicals, result in bio-accumulation along food chains, and destroy sensitive eco-system components such as corals, that may ultimately bring lethal impacts to marine biodiversity. Thus, the objectives of this study were to assess the abundance, categories, sources of pollution, weathering status and aggregation of Floating Microplastics (FMP), that have been accumulated in surface waters in aforesaid ecosystems. The average abundance of FMP (0.3 – 5.0 mm) at the Bar Reef marine sanctuary, ranged from 0.54 to 30.43 particles Per Square Meter (PSM) in 2018, and 0.60 to 30.81 PSM in 2019, whereas the average FMP at the Pigeon Island National Park varied from 0.24 to 16.83 PSM in 2018, and 0.26 to 17.09 PSM in 2019. At all monitoring circumstances, the abundance of FMP at the Bar Reef marine sanctuary was notably higher, compared to the concentrations recorded from Pigeon Island National Park. Results indicated an increase in the abundance of FMP in both coral reef systems. Compared to 2018, the abundance of FMP at Bar-Reef marine sanctuary has been increased by 9.47% whereas that in Pigeon Island National Park has been increased by 5.94%. This study provides the first evidence on the aggregation of floating microplastics in waters around coral-based eco-systems in Sri Lanka.

Keywords: marine microplastics, Bar Reef, Pigeon Islands

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